

counterparty when the amount is positive, or post the variation margin amount with the counterparty when the amount is negative as calculated pursuant to § 23.155 and in a form that complies with § 23.156.

(b) *Continuing obligation.* The covered swap entity shall continue to collect the variation margin amount from, or to post the variation margin amount with, the counterparty as calculated each business day pursuant to § 23.155 and in a form that complies with § 23.156 each business day until such uncleared swap is terminated or expires.

(c) *Minimum transfer amount.* A covered swap entity is not required to collect or to post variation margin pursuant to §§ 23.150 through 23.161 with respect to a particular counterparty unless and until the combined amount of initial margin and variation margin that is required pursuant to §§ 23.150 through 23.161 to be collected or posted and that has not been collected or posted with respect to the counterparty is greater than \$500,000.

(d) *Netting.* (1) To the extent that more than one uncleared swap is executed pursuant to an eligible master netting agreement between a covered swap entity and a counterparty, a covered swap entity may calculate and comply with the applicable variation margin requirements of this section on an aggregate basis with respect to all uncleared swaps governed by such agreement subject to paragraph (d)(2) of this section.

(2)(i) Except as permitted in paragraph (d)(2)(ii) of this section, if an eligible master netting agreement covers uncleared swaps entered into on or after the applicable compliance date set forth in § 23.161, all the uncleared swaps covered by that agreement are subject to the requirements of §§ 23.150 through 23.161 and included in the aggregate netting portfolio for the purposes of calculating and complying with the margin requirements of §§ 23.150 through 23.161.

(ii) An eligible master netting agreement may identify one or more separate netting portfolios that independently meet the requirements in paragraph (1) of the definition of “eligible master netting agreement” in § 23.151

and to which collection and posting of margin applies on an aggregate net basis separate from and exclusive of any other uncleared swaps covered by the eligible master netting agreement. Any such netting portfolio that contains any uncleared swap entered into on or after the applicable compliance date set forth in § 23.161 is subject to the requirements of §§ 23.150 through 23.161. Any such netting portfolio that contains only uncleared swaps entered into before the applicable compliance date is not subject to the requirements of §§ 23.150 through 23.161.

(e) *Satisfaction of collection and payment requirements.* A covered swap entity shall not be deemed to have violated its obligation to collect or to pay variation margin from a counterparty if:

(1) The counterparty has refused or otherwise failed to provide or to accept the required variation margin to or from the covered swap entity; and

(2) The covered swap entity has:

(i) Made the necessary efforts to collect or to post the required variation margin, including the timely initiation and continued pursuit of formal dispute resolution mechanisms, including pursuant to § 23.504(b)(4), if applicable, or has otherwise demonstrated upon request to the satisfaction of the Commission that it has made appropriate efforts to collect or to post the required variation margin; or

(ii) Commenced termination of the uncleared swap with the counterparty promptly following the applicable cure period and notification requirements.

§ 23.154 Calculation of initial margin.

(a) *Means of calculation.* (1) Each business day each covered swap entity shall calculate an initial margin amount to be collected from each covered counterparty using:

(i) A risk-based model that meets the requirements of paragraph (b) of this section; or

(ii) The table-based method set forth in paragraph (c) of this section.

(2) Each business day each covered swap entity shall calculate an initial margin amount to be posted with each financial end user with material swaps exposure using:

(i) A risk-based model that meets the requirements of paragraph (b) of this section; or

(ii) The table-based method set forth in paragraph (c) of this section.

(3) Each covered swap entity may reduce the amounts calculated pursuant to paragraphs (a)(1) and (2) of this section by the initial margin threshold amount provided that the reduction does not include any portion of the initial margin threshold amount already applied by the covered swap entity or its margin affiliates in connection with other uncleared swaps with the counterparty or its margin affiliates.

(4) The amounts calculated pursuant to paragraph (a)(3) of this section shall not be less than zero.

(b) *Risk-based models*—(1) *Commission or registered futures association approval.*

(i) A covered swap entity shall obtain the written approval of the Commission or a registered futures association to use a model to calculate the initial margin required in §§ 23.150 through 23.161.

(ii) A covered swap entity shall demonstrate that the model satisfies all of the requirements of this section on an ongoing basis.

(iii) A covered swap entity shall notify the Commission and the registered futures association in writing 60 days prior to:

(A) Extending the use of an initial margin model that has been approved to an additional product type;

(B) Making any change to any initial margin model that has been approved that would result in a material change in the covered swap entity's assessment of initial margin requirements; or

(C) Making any material change to modeling assumptions used by the initial margin model.

(iv) The Commission or the registered futures association may rescind approval of the use of any initial margin model, in whole or in part, or may impose additional conditions or requirements if the Commission or the registered futures association determines, in its discretion, that the model no longer complies with this section.

(2) *Elements of the model.* (i) The initial margin model shall calculate an amount of initial margin that is equal

to the potential future exposure of the uncleared swap or netting portfolio of uncleared swaps covered by an eligible master netting agreement. Potential future exposure is an estimate of the one-tailed 99 percent confidence interval for an increase in the value of the uncleared swap or netting portfolio of uncleared swaps due to an instantaneous price shock that is equivalent to a movement in all material underlying risk factors, including prices, rates, and spreads, over a holding period equal to the shorter of ten business days or the maturity of the swap or netting portfolio.

(ii) All data used to calibrate the initial margin model shall be based on an equally weighted historical observation period of at least one year and not more than five years and must incorporate a period of significant financial stress for each broad asset class that is appropriate to the uncleared swaps to which the initial margin model is applied.

(iii) The initial margin model shall use risk factors sufficient to measure all material price risks inherent in the transactions for which initial margin is being calculated. The risk categories shall include, but should not be limited to, foreign exchange or interest rate risk, credit risk, equity risk, and commodity risk, as appropriate. For material exposures in significant currencies and markets, modeling techniques shall capture spread and basis risk and shall incorporate a sufficient number of segments of the yield curve to capture differences in volatility and imperfect correlation of rates along the yield curve.

(iv) In the case of an uncleared cross-currency swap, the initial margin model need not recognize any risks or risk factors associated with the fixed, physically-settled foreign exchange transactions associated with the exchange of principal embedded in the uncleared cross-currency swap. The initial margin model must recognize all material risks and risk factors associated with all other payments and cash flows that occur during the life of the uncleared cross-currency swap.

(v) The initial margin model may calculate initial margin for an uncleared swap or netting portfolio of

uncleared swaps covered by an eligible master netting agreement. It may reflect offsetting exposures, diversification, and other hedging benefits for uncleared swaps that are governed by the same eligible master netting agreement by incorporating empirical correlations within the following broad risk categories, provided the covered swap entity validates and demonstrates the reasonableness of its process for modeling and measuring hedging benefits: Commodity, credit, equity, and foreign exchange or interest rate. Empirical correlations under an eligible master netting agreement may be recognized by the model within each broad risk category, but not across broad risk categories.

(vi) If the initial margin model does not explicitly reflect offsetting exposures, diversification, and hedging benefits between subsets of uncleared swaps within a broad risk category, the covered swap entity shall calculate an amount of initial margin separately for each subset of uncleared swaps for which such relationships are explicitly recognized by the model. The sum of the initial margin amounts calculated for each subset of uncleared swaps within a broad risk category will be used to determine the aggregate initial margin due from the counterparty for the portfolio of uncleared swaps within the broad risk category.

(vii) The sum of the initial margin calculated for each broad risk category shall be used to determine the aggregate initial margin due from the counterparty.

(viii) The initial margin model shall not permit the calculation of any initial margin to be offset by, or otherwise take into account, any initial margin that may be owed or otherwise payable by the covered swap entity to the counterparty.

(ix) The initial margin model shall include all material risks arising from the nonlinear price characteristics of option positions or positions with embedded optionality and the sensitivity of the market value of the positions to changes in the volatility of the underlying rates, prices, or other material risk factors.

(x) The covered swap entity shall not omit any risk factor from the calculation

of its initial margin that the covered swap entity uses in its model unless it has first demonstrated to the satisfaction of the Commission or the registered futures association that such omission is appropriate.

(xi) The covered swap entity shall not incorporate any proxy or approximation used to capture the risks of the covered swap entity's uncleared swaps unless it has first demonstrated to the satisfaction of the Commission or the registered futures association that such proxy or approximation is appropriate.

(xii) The covered swap entity shall have a rigorous and well-defined process for re-estimating, re-evaluating, and updating its internal margin models to ensure continued applicability and relevance.

(xiii) The covered swap entity shall review and, as necessary, revise the data used to calibrate the initial margin model at least annually, and more frequently as market conditions warrant, to ensure that the data incorporate a period of significant financial stress appropriate to the uncleared swaps to which the initial margin model is applied.

(xiv) The level of sophistication of the initial margin model shall be commensurate with the complexity of the swaps to which it is applied. In calculating an initial margin amount, the initial margin model may make use of any of the generally accepted approaches for modeling the risk of a single instrument or portfolio of instruments.

(xv) The Commission or the registered futures association may in its discretion require a covered swap entity using an initial margin model to collect a greater amount of initial margin than that determined by the covered swap entity's initial margin model if the Commission or the registered futures association determines that the additional collateral is appropriate due to the nature, structure, or characteristics of the covered swap entity's transaction(s) or is commensurate with the risks associated with the transaction(s).

(3) [Reserved]

(4) *Periodic review.* A covered swap entity shall periodically, but no less frequently than annually, review its initial margin model in light of developments in financial markets and modeling technologies, and enhance the initial margin model as appropriate to ensure that it continues to meet the requirements for approval in this section.

(5) *Control, oversight, and validation mechanisms.* (i) The covered swap entity shall maintain a risk management unit in accordance with § 23.600(c)(4)(i) that is independent from the business trading unit (as defined in § 23.600).

(ii) The covered swap entity's risk control unit shall validate its initial margin model prior to implementation and on an ongoing basis. The covered swap entity's validation process shall be independent of the development, implementation, and operation of the initial margin model, or the validation process shall be subject to an independent review of its adequacy and effectiveness. The validation process shall include:

(A) An evaluation of the conceptual soundness of (including developmental evidence supporting) the initial margin model;

(B) An ongoing monitoring process that includes verification of processes and benchmarking by comparing the covered swap entity's initial margin model outputs (estimation of initial margin) with relevant alternative internal and external data sources or estimation techniques. The benchmark(s) must address the model's limitations. When applicable the covered swap entity should consider benchmarks that allow for non-normal distributions such as historical and Monte Carlo simulations. When applicable validation shall include benchmarking against observable margin standards to ensure that the initial margin required is not less than what a derivatives clearing organization would require for similar cleared transactions; and

(C) An outcomes analysis process that includes back testing the model. This analysis shall recognize and compensate for the challenges inherent in back testing over periods that do not contain significant financial stress.

(iii) If the validation process reveals any material problems with the model, the covered swap entity must promptly notify the Commission and the registered futures association of the problems, describe to the Commission and the registered futures association any remedial actions being taken, and adjust the model to ensure an appropriately conservative amount of required initial margin is being calculated.

(iv) In accordance with § 23.600(e)(2), the covered swap entity shall have an internal audit function independent of the business trading unit and the risk management unit that at least annually assesses the effectiveness of the controls supporting the initial margin model measurement systems, including the activities of the business trading units and risk control unit, compliance with policies and procedures, and calculation of the covered swap entity's initial margin requirements under this part. At least annually, the internal audit function shall report its findings to the covered swap entity's governing body, senior management, and chief compliance officer.

(6) *Documentation.* The covered swap entity shall adequately document all material aspects of its model, including management and valuation of uncleared swaps to which it applies, the control, oversight, and validation of the initial margin model, any review processes and the results of such processes.

(7) *Escalation procedures.* The covered swap entity must adequately document—

(i) Internal authorization procedures, including escalation procedures, that require review and approval of any change to the initial margin calculation under the initial margin model;

(ii) Demonstrable analysis that any basis for any such change is consistent with the requirements of this section; and

(iii) Independent review of such demonstrable analysis and approval.

(c) *Table-based method.* If a model meeting the standards set forth in paragraph (b) of this section is not used, initial margin shall be calculated in accordance with this paragraph.

Commodity Futures Trading Commission

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(1) *Standardized initial margin schedule.*

Asset class	Gross initial margin (% of notional exposure)
Credit: 0–2 year duration	2
Credit: 2–5 year duration	5
Credit: 5+ year duration	10
Commodity	15
Equity	15
Foreign Exchange/Currency	6
Cross Currency Swaps: 0–2 year duration ...	1
Cross Currency Swaps: 2–5 year duration ...	2
Cross Currency Swaps: 5+ year duration	4
Interest Rate: 0–2 year duration	1
Interest Rate: 2–5 year duration	2
Interest Rate: 5+ year duration	4
Other	15

(2) *Net to gross ratio adjustment.* (i) For multiple uncleared swaps subject to an eligible master netting agreement, the initial margin amount under the standardized table shall be computed according to this paragraph.

(ii) Initial Margin = $0.4 \times \text{Gross Initial Margin} + 0.6 \times \text{Net-to-Gross Ratio} \times \text{Gross Initial Margin}$, where:

(A) Gross Initial Margin = the sum of the product of each uncleared swap's effective notional amount and the gross initial margin requirement for all uncleared swaps subject to the eligible master netting agreement;

(B) Net-to-Gross Ratio = the ratio of the net current replacement cost to the gross current replacement cost;

(C) Gross Current Replacement cost = the sum of the replacement cost for each uncleared swap subject to the eligible master netting agreement for which the cost is positive; and

(D) Net Current Replacement Cost = the total replacement cost for all uncleared swaps subject to the eligible master netting agreement.

(E) In cases where the gross replacement cost is zero, the Net-to-Gross Ratio shall be set to 1.0.

§ 23.155 Calculation of variation margin.

(a) *Means of calculation.* (1) Each business day each covered swap entity shall calculate variation margin for itself and for each counterparty that is a swap entity or a financial end user using methods, procedures, rules, and inputs that to the maximum extent practicable rely on recently-executed transactions, valuations provided by

independent third parties, or other objective criteria.

(2) Each covered swap entity shall have in place alternative methods for determining the value of an uncleared swap in the event of the unavailability or other failure of any input required to value a swap.

(b) *Control mechanisms.* (1) Each covered swap entity shall create and maintain documentation setting forth the variation methodology with sufficient specificity to allow the counterparty, the Commission, the registered futures association, and any applicable prudential regulator to calculate a reasonable approximation of the margin requirement independently.

(2) Each covered swap entity shall evaluate the reliability of its data sources at least annually, and make adjustments, as appropriate.

(3) The Commission or the registered futures association at any time may require a covered swap entity to provide further data or analysis concerning the methodology or a data source, including:

(i) An explanation of the manner in which the methodology meets the requirements of this section;

(ii) A description of the mechanics of the methodology;

(iii) The conceptual basis of the methodology;

(iv) The empirical support for the methodology; and

(v) The empirical support for the assessment of the data sources.

§ 23.156 Forms of margin.

(a) *Initial margin*—(1) *Eligible collateral.* A covered swap entity shall collect and post as initial margin for trades with a covered counterparty only the following types of collateral:

(i) Immediately available cash funds denominated in:

(A) U.S. dollars;

(B) A major currency;

(C) A currency of settlement for the uncleared swap;

(ii) A security that is issued by, or unconditionally guaranteed as to the timely payment of principal and interest by, the U.S. Department of Treasury;

(iii) A security that is issued by, or unconditionally guaranteed as to the